

## 8.0

# *Wetlands*

Wetlands perform a variety of functions important to maintaining the quality of natural and cultural resources on Department of Defense lands, and to supporting the military mission and quality of life for soldiers. Healthy native wetlands supply habitat for wetland-dependent plant communities and fish and wildlife species. They contribute to environmental quality by moderating flood flows; protecting against erosion; improving water quality; and supporting global cycling of available nitrogen, sulfur, carbon dioxide, and methane. Additionally wetlands provide aesthetic and recreational value to support the quality of life for soldiers and supply realistic training conditions for field training exercises.

It is estimated that since colonial times, the U.S. has lost over half of its wetlands (U.S. EPA, 1997). National and local rates of wetland loss were the highest from the mid-1950s through the mid-1970s. Between 1982 and 1989, the Chesapeake Bay watershed lost about 2.5% of its wetlands, most of them palustrine (U.S. EPA, 1999a). Activities that have contributed to the losses and degradation of the nation's wetlands include draining for agriculture and development, dredging and stream channelization, disposing of dredge material, impounding, tilling for crop production, logging, mining, and grazing by domestic animals. Other human-related wetland degradation factors include polluted runoff from agricultural, urban, and industrial areas; air contaminants; changing nutrient levels; toxic chemicals; and nonnative species infestations. Natural causes of wetland loss include erosion, subsidence, sea level rise, droughts, and hurricanes and other storms.

Although the rate of wetlands loss has decreased since the mid-1970s, increasing population numbers will inevitably result in intensified pressure on wetlands. As urbanization increases, the function and value of the remaining wetlands may be impaired.

Wetlands impairment has far-reaching ecosystem effects. Wetland-dependent fish and wildlife species populations will continue to decrease until wetland loss and degradation is stopped. Increases in flood damages, drought damages, and declining bird populations are also, in part, the result of wetlands degradation and destruction. DoD recognizes the value of wetlands and is committed to no net loss of wetlands on its lands.

The regional wetland pattern within the Fort Belvoir area is characteristic of the upper Coastal Plain/lower Piedmont, with wetlands typically occurring in association with the drainage network. The larger tributary waterways to the Potomac, such as Accotink Creek, Dogue Creek and Pohick Creek, tend to have wide areas of tidal wetlands (marsh and mudflats) at their outfalls. Upstream from the outfall area, the marsh wetland area gives way to floodplain/bottomland hardwood forest within the riparian zone. This forest area tends to be wider in the lower reaches, where the tidally influenced floodplain is wide and lower, and diminishes in extent further upstream concurrent with the narrowing of the floodplain area.

The Fort Belvoir local area has another characteristic wetland type: the seepage swamp wetland. This type of wetland occurs in steep-sloped areas along the Potomac River and its associated tributaries. The occurrences of this wetland type tend to be limited in extent.

## **8.1 WETLANDS POLICIES**

### **8.1.1 Federal Wetlands Policy**

There are a number of federal laws, regulations, and policies that mandate wetland protection.

- Executive Order 11990, *Protection of Wetlands* (May 24, 1977), requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
- North American Wetlands Conservation, 16 U.S.C. §4408, requires the restoration, management, and protection of wetlands and habitat for migratory birds on federal lands.
- Wetlands Resources, 16 U.S.C. §3901, calls for intensifying cooperative efforts among federal, state, and local governments, and private interests for the management and conservation of wetlands.
- Wetlands permitting, Section 404 of the Clean Water Act, establishes a permit program for dredging and filling within wetlands.

### **8.1.2 State Wetlands Policy**

The Commonwealth of Virginia protects wetlands through a number of laws and provisions.

- The Virginia Wetlands Act of 1972 (Title 62.1 of the Code of Virginia), protects tidal wetlands and regulates wetland development.
- The Virginia Tidal Wetlands Act of 1972 (Title 28.2 of the Code of Virginia), authorizes local governments to exercise jurisdiction and issue permits for wetlands development. Section 28.2-1308 provides standards for use and development of wetlands and utilization guidelines.
- The Chesapeake Bay Preservation Act (§10.1-2100 et seq. of the Code of Virginia), allows for the creation of Chesapeake Bay Preservation Areas and restricts development in related wetlands.
- Virginia Water Protection Regulations (Virginia Regulations, VR 680-15-02), regulates state waters, including wetlands, and requires the Virginia Water Protection Permit for activities involving wetlands under Clean Water Act Section 404.
- *Virginia Acts of Assembly* Chapters 1054 (House) and 1032 (Senate), passed in the 2000 session, amends existing wetland laws to require a Virginia Water Protection Permit from the Water Control Board for certain activities in non-tidal wetlands.

### 8.1.3 Department of Defense Wetlands Policy

DoD's natural resources management policy is contained within DoDI 4715.3, *Environmental Conservation Program*. This instruction requires installations to follow an ecosystem-based approach to natural resources management, to inventory and protect important biological resources, and to promote biodiversity. The instruction articulates DoD's goal of no net loss of wetlands. It also allows for multiple uses of an installation's natural resources, and for public access to these resources for recreation, education and scientific research and study, compatible with the installation's ecosystem management goals. DoD's policy on wetlands, as established in DoDI 4715.3 is as follows:

<b>Excerpts from DODI 4715.3 Select Provisions Applicable to Wetlands</b>
<ul style="list-style-type: none"><li>■ DoD lands shall be managed for the goal of no net loss of wetlands. DoD operations and activities shall avoid the net loss of size, function, or value of wetlands. Additionally, the Department of Defense will preserve the natural and beneficial values of wetlands in carrying out its activities (E.O 11990, reference (1)). The development of mitigation "banks" is encouraged as sound conservation planning. D2j</li><li>■ All DoD conservation programs shall work to guarantee continued access to our land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD care are sustained in a healthy condition for scientific research, education, and other compatible uses by future generations. (D1a)</li><li>■ The principal purpose of DoD lands and waters is to support mission-related activities. Those lands and waters shall be made available to the public for educational or recreational use of natural and cultural resources when such access is compatible with military mission activities, ecosystem sustainability, and with other considerations such as security.... (D1d)</li><li>■ Natural resources under the stewardship and control of the Department of Defense shall be managed to support and be consistent with the military mission, while protecting and enhancing those resources for multiple use, sustainable yield, and biological integrity. Land use practices and decisions shall be based on scientifically sound conservation procedures and techniques, and use scientific methods and an ecosystem approach. (D2a)</li><li>■ Biologically or geographically significant or sensitive natural resources (e.g., wetlands, forests, floodplains, watersheds, estuaries, riparian areas, coastal barrier islands, marine sanctuaries, critical habitats, animal migration corridors) or species (e.g., threatened or endangered species, certain marine mammals, and migratory birds) shall be inventoried and managed to protect these resources, and to promote biodiversity, using the goals identified in paragraph F1a. (D2c)</li><li>■ Management measures for the removal or control of exotic species shall be included in installation INRMPs when applicable. (D2h)</li></ul>

**Excerpts from DODI 4715.3  
Select Provisions Applicable to Wetlands**

*(continued)*

- Consistent with ecosystem-based management, altered or degraded landscapes and associated habitats shall be restored and rehabilitated whenever practical. (D21)
- Portions of installation real property that have significant ecological, cultural, scenic, recreational, or educational value may be set aside for conservation of those resources, where such conservation is consistent with the military mission. (F1j)

#### **8.1.4 Department of the Army Wetlands Policy**

The Army's natural resources management policy is contained within AR 200-3, *Natural Resources—Land, Forest and Wildlife Management*. This regulation establishes the Army's requirements for avoiding adverse impacts to aquatic resources, and protecting, restoring, and creating wetlands. AR 200-3 institutes the Army's commitment to conserve, protect, and sustain biological diversity, and to restore degraded ecosystems. AR 200-3 also establishes the Army's commitment to provide sustained multiple use of, and public access to, natural resources. DA's policy on wetlands, as established in AR 200-3 is as follows:

**Excerpts from AR 200-3  
Select Provisions Applicable to Wetlands**

- It is DA policy to avoid adverse impacts to existing aquatic resources and offset those adverse impacts which are unavoidable. Additionally, the Army will strive to achieve a goal of no net loss of values and functions to existing wetlands, and permit no overall net loss of wetlands on Army controlled lands. Furthermore, the DA will take a progressive approach towards protecting existing wetlands, rehabilitating degraded wetlands, restoring former wetlands, and creating wetlands in an effort to increase the quality and quantity of the nation's wetlands resource base. To meet this requirement, installations will identify and maintain a current inventory of their wetlands resources. (Para. 2-21b)
- The natural resources management professional will be an active participant in all planning and decision making activities regarding uses of the land to ensure that current and planned mission activities (for example, master planning, construction requests, site approval requests, and training exercise plans) are conducted in a manner which is compatible with natural resources and other environmental requirements. (Para. 3-2b)

#### **8.1.5 Fort Belvoir Wetlands Policy**

Fort Belvoir does not have installation-specific policy regarding wetlands management. Rather, management actions are guided directly by federal, state, DoD, and DA policy.

Fort Belvoir Regulation 210-27, *Range Procedures and Utilization of Training Areas*, helps to protect wetlands on post by providing specific requirements for environmental protection and conservation of training areas. It requires that vehicles stay on established trails and roads, restricts riot control agents to specified training areas to minimize environmental damage, and requires that all waste be removed from the training areas and disposed of properly. The regulation also requires ENRD review of all land disturbing activities (U.S. Army, 1994).

### **8.1.6 Chesapeake Bay Program**

DoD and DA are signatory partners in the Chesapeake Bay Program (CBP). The 1987 *Chesapeake Bay Agreement*, the 1990 *Cooperative Agreement Between DoD and EPA Concerning Chesapeake Bay Activities*, the 1993 *DoD/EPA Action Items for the Chesapeake Bay Program*, the 1994 *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay*, the 1998 *Federal Agencies' Chesapeake Ecosystem Unified Plan (FACEUP)*, and the renewed Chesapeake Bay agreement, *Chesapeake 2000*, contain specific goals, objectives, and commitments designed to provide for the restoration and protection of the Bay's living resources and their habitats. The CBP developed a 1989 Chesapeake Bay Wetlands Policy that calls for a commitment by participants to attain a net gain in wetlands acreage within the Chesapeake Bay basin. In 1997, the CBP's Executive Council signed Directive No. 97-2, *Wetlands Protection and Restoration Goals*, which reaffirmed the 1989 policy and called for the development of strategies for implementation. The 1998 *FACEUP* calls for federal agencies to support the CBP by assisting states in implementing their strategies for a net gain of wetlands. This plan established a wetlands restoration goal for federal facilities of 100 acres per year, beginning in 2000. The CBP's renewed Bay agreement, *Chesapeake 2000*, calls for signatories to restore an overall total of 25,000 acres of tidal and non-tidal wetlands by 2010 within the Chesapeake Bay basin, with an average restoration rate by 2005 of 2,500 acres per year.

## **8.2 BASELINE WETLAND CONDITIONS**

### **8.2.1 Wetlands Survey**

Fort Belvoir completed a baseline inventory of the wetlands on Main Post in 1997 (Figure 8.1) (Paciulli, Simmons and Associates, 1997a) and on EPG in 1999 (Paciulli, Simmons and Associates, 1999b). The purpose of these planning surveys was to identify and map the general locations and types of wetlands on post. The surveys were not intended to serve as jurisdictional delineations.

The baseline wetland inventories were done using photointerpretation of recent installation aerial photography with limited field survey to ground truth. The wetland delineation was done following the U.S. Army Corps of Engineers wetland delineation manual (Environmental Laboratory, 1987), and the wetland types were classified according to the U.S. Fish and Wildlife Service classification system (Cowardin et al., 1979). The results of these surveys have been incorporated into the installation GIS.

Approximately 1,250 acres of wetlands were identified on Fort Belvoir's Main Post and approximately 26 acres on EPG through the baseline wetland surveys (Paciulli, Simmons and

Associates, Ltd., 1997a; 1999b). This represents approximately 11% and 3% of the two installation areas, respectively. As shown in Figure 8.1 and Table 8.1, the predominant wetland type on Fort Belvoir is palustrine forested, which tends to occur in association with the riparian areas of Accotink, Dogue, and Pohick creeks.

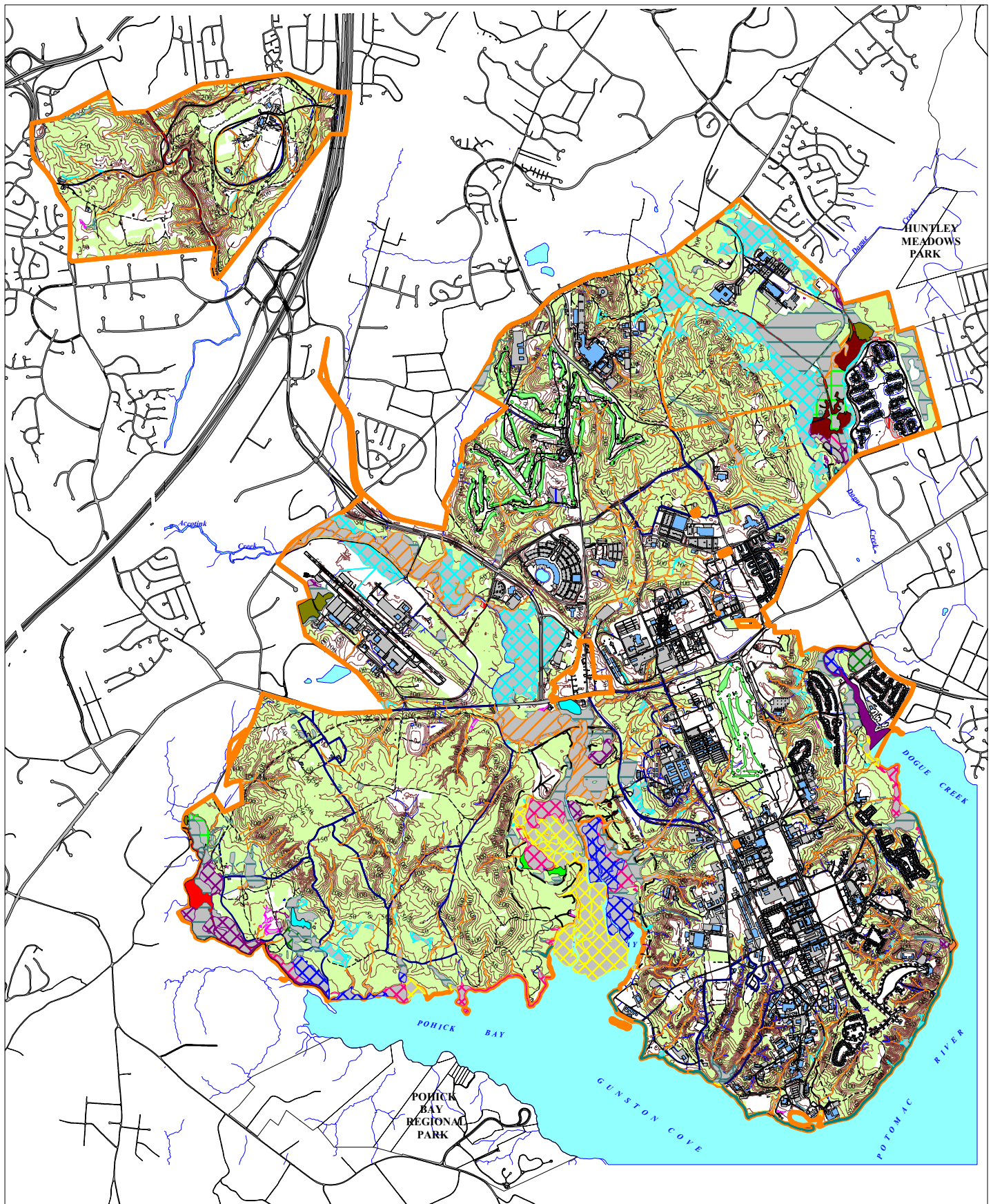
<b>Table 8.1: Wetland Type and Acreage on Fort Belvoir</b>		
<b>Wetland Type</b>	<b>Acreage</b>	
	<i>Main Post</i>	<i>EPG</i>
Palustrine emergent (Total)	141.900	0.750
Temporarily flooded	2.820	-
Saturated	4.090	0.750
Seasonally flooded	47.000	-
Semipermanently flooded	16.420	-
Permanently flooded	7.900	-
Seasonal/tidal	63.670	-
Palustrine forested (Total)	855.570	13.520
Broad-leaved deciduous, temporarily flooded	228.280	8.730
Broad-leaved deciduous, saturated	286.950	2.010
Broad-leaved deciduous, seasonally flooded	260.000	2.780
Broad-leaved deciduous, semipermanently flooded	13.450	-
Broad-leaved deciduous, permanently flooded	1.130	-
Broad-leaved deciduous, seasonal-tidal	59.290	-
Broad-leaved deciduous, saturated/semipermanent/seasonal	3.880	-
Needle-leaved evergreen, seasonally flooded	2.590	-
Palustrine open water (Total)	31.920	0.180
Permanently flooded	25.440	-
Intermittently exposed/permanent	6.480	0.180
Palustrine scrub-shrub (Total)	0.054	6.034
Broad-leaved deciduous, saturated	-	5.990
Broad-leaved deciduous seasonally flooded	0.054	0.044
Riverine tidal (Total)	165.430	0.000
Emergent, regularly flooded	132.330	-
Flats, regularly flooded	1.350	-
Open water, permanent	21.070	-
Unconsolidated shore, regularly flooded	10.680	-
Riverine, lower perennial, open water, permanent-tidal	23.720	5.250
Riverine emergent, permanently flooded	26.450	-

Source: Paciulli, Simmons & Associates, 1997a and 1999b.

## 8.2.2 Natural Heritage Inventory

In 1997, the Virginia Department of Conservation's Natural Heritage Program (DCR-NHP) completed a natural heritage inventory of Fort Belvoir (Hobson, 1996; 1997). The purpose of the inventory was to systematically identify the installation's natural heritage resources: those sites





FORT BELVOIR WETLAND TYPES

PEMA	PFO1C	PSS1B	PEMH	PFO1Y	R1OWV
PEMB	PFO1F	PSS1C	PEMR	PFO4C	R1USN
PEMC	PFO1H	R1EMN	PFO1A	POWH	R2OWH
PEMF	PFO1R	R1FLN	PFO1B	POWZ	REMH



**WETLANDS**  
**on FORT BELVOIR**  
 SOURCE: PACIULLI, SIMMONS &  
 ASSOCIATES, LTD., 1997; 1999  
 FIGURE: 8.1

supporting unique or exemplary natural communities, rare plants and rare animals, and other significant natural areas. The inventory defined three on-post areas associated with extensive wetlands as having significant biodiversity (Figure 8.2):

- Pohick Creek-Pohick Bay-lower Accotink Creek-Accotink Bay wetland complex, rated as B3, “High Significance: excellent example of community type; good occurrence of a G3 (globally rare to uncommon) species.”
- Upper Dogue Creek wetland complex rated as B5, “General Biodiversity Significance: good or marginal occurrence of community type, or state-rare species.”
- T-17 ravine seeps rated as B1, “Outstanding Significance: only known site for an element, an excellent occurrence of a G-1 (globally rare) species” because these seeps are the only known site in the world to support the northern Virginia well amphipod (*Stygobromus phreaticus*) (Section 12).

DCR-NHP reported that these areas are vulnerable to threats from invasive/exotic vegetation, stormwater management problems (e.g., siltation, erosion, water quality impacts), and problem wildlife, as well as from impacts by adjacent land-use developments. DCR-NHP provided management recommendations to control these threats (Hobson, 1996; 1997).

## **8.3 WETLAND MANAGEMENT**

### **8.3.1 Wetland Conservation Recommendations**

The results of the installation baseline wetland surveys and natural heritage inventory indicate that Fort Belvoir possesses extensive areas of wetlands, including wetlands that have high priorities for conservation, as assigned by DCR-NHP. While land disturbance (e.g., construction, land disturbing training or outdoor recreation) represent a direct threat to installation wetland resources, Fort Belvoir’s wetland resources are also vulnerable to disturbance by invasive/exotic species, stormwater (e.g., erosion and sedimentation), and problem wildlife (e.g., beaver), as well as by impacts from adjacent land-use developments and activities. Management of these threats was emphasized the DCR-NHP natural heritage inventory reports (Hobson, 1996; 1997). Specific recommendations include the following:

- Monitoring rare species
- Monitoring and controlling invasive vegetation (e.g., Phragmites)
- Monitoring and controlling destruction by beaver activity
- Implementing stormwater management actions to control habitat impacts



- Performing hydrologic and water quality assessments of wetland areas and undertaking improvements as needed
- Maintaining a buffer around the Jackson Miles Abbott Wetland Refuge (JMAWR) wetlands.
- Characterize and protect groundwater quality and flow at the T-17 ravine.

DCR-NHP recommended establishing conservation areas to protect the Accotink Bay wetlands, the upper Dogue Creek wetlands and the T-17 ravine (Figure 8.2).

### **8.3.2 Wetland Management Actions to Date**

To date, Fort Belvoir's management emphasis has been on protection of wetland areas from loss/disturbance by construction, or by land disturbing outdoor recreation or military training or testing activities. In those instances where a construction-related wetland loss is unavoidable, it has been Fort Belvoir policy to mitigate by replacing the wetlands at a minimum one-to-one basis.

#### ***Wetlands Protection***

Fort Belvoir has set aside for conservation three designated "Special Natural Areas:" the Accotink Bay Wildlife Refuge (ABWR), the JMAWR, and the Forest and Wildlife Corridor (Section 13). Much of the installation's wetland area is included in the two installation refuges. Management of these refuges precludes land-disturbing activities. Furthermore, the Fort Belvoir Master Plan designates all installation wetland areas as "environmentally constrained to development" (Woolpert, 1993a).

These land-use designations have been effective at safeguarding installation wetlands from loss to development, or installation operations. From 1995 to 2000, Fort Belvoir lost only three areas of wetlands to development, including (1) a 4.4-acre forested wetland area filled by VDOT for construction of the Fairfax County Parkway; (2) a 1-acre non-tidal emergent wetland filled for a D.C. National Guard facility at Davison Army Airfield; and (3) a 0.05 acre tidal emergent wetland filled along the Potomac River for a new National Guard launch facility.

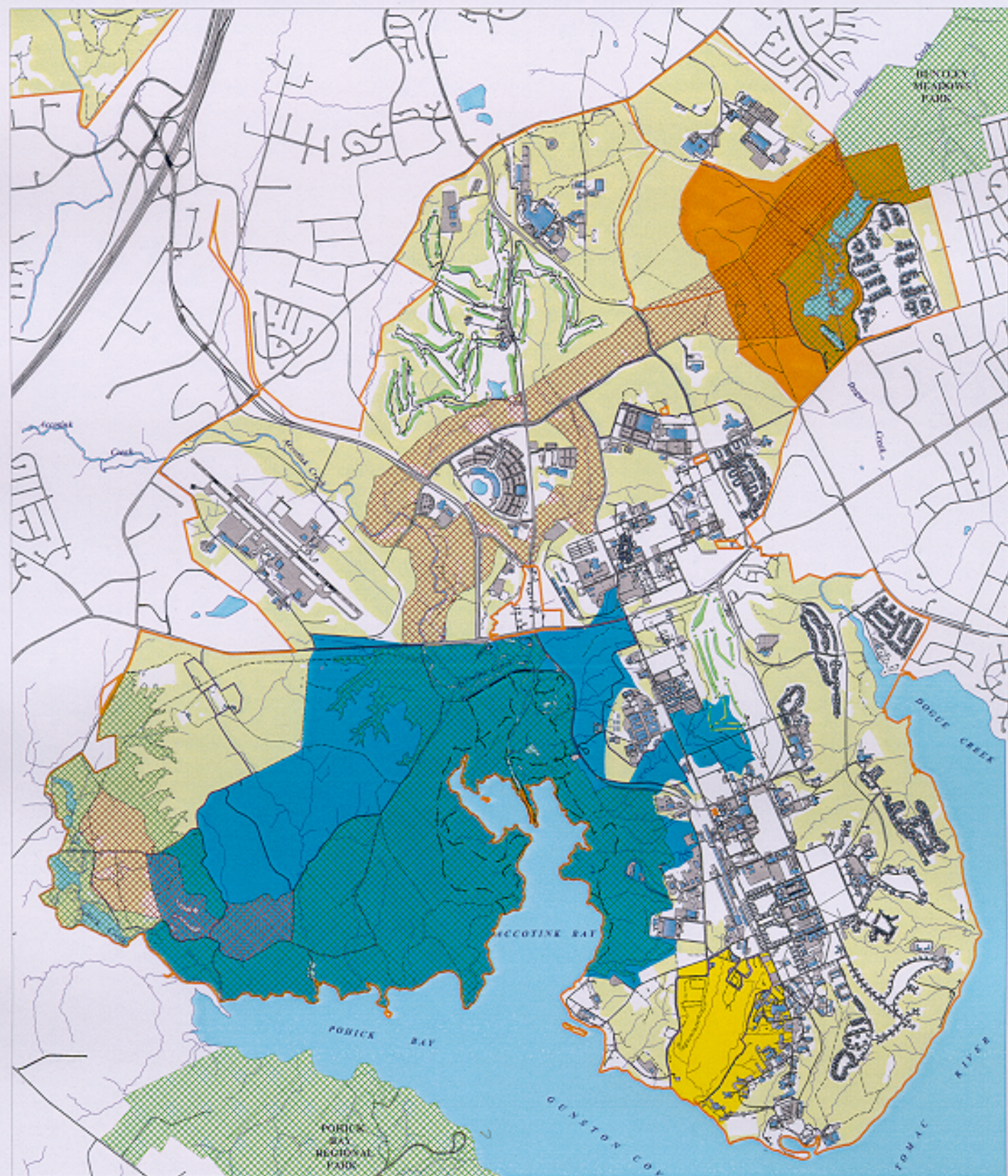
Fort Belvoir has wetland mitigation projects for each of these wetland losses including the following:

- A 2-acre forested wetland and a 1.5-acre forested wetland were constructed by VDOT for the Fairfax County Parkway (1995).
- A 1-acre non-tidal emergent wetland was constructed for the D.C. National Guard project<sup>1</sup> (1994).
- A 0.1-acre tidal emergent wetland is being developed for the National Guard project (awaiting construction as of 2000).

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<sup>1</sup> The non-tidal emergent wetland was subsequently changed to a shrub/scrub wetland to reduce its attractiveness to waterfowl, which pose a hazard to the airfield.





- Dogue Creek Wetland Conservation Area
- Potomac/Accotink Wetland Conservation Area
- T-17 Ravine Conservation Area

- Accotink Bay Wildlife Refuge
- Jackson Miles Abbott Wetland Refuge
- Wildlife Corridor



**VIRGINIA NATURAL HERITAGE INVENTORY  
RECOMMENDED CONSERVATION AREAS  
on FORT BELVOIR**

SOURCE: HOBSON, 1996; 1997

FIGURE: 8.2



These mitigation projects are included in the installation GIS. They are being monitored for a period of 5 years, in accordance with the U.S. Army Corps of Engineers wetland mitigation policy.

### ***Wetlands Enhancement***

In recent years, Fort Belvoir began to address conservation and enhancement of native biodiversity within ecological communities, including wetland communities, by identifying and controlling threats from invasive/exotic species, stormwater-related problems, and problem wildlife.

As addressed in Section 9, Fort Belvoir has implemented an invasive/exotic vegetation management program. The first invasive/exotic vegetation management actions were undertaken in 1999 in an effort to control *Phragmites australis* (phragmites) in Accotink Bay and Dogue Creek. In addition, Fort Belvoir manages problem beaver activity on a case-by-case basis (Section 11).

As addressed in Section 7, Fort Belvoir has implemented a watershed restoration program to correct stormwater-related problems within installation stream corridors, and began implementing best management practices (BMPs) to safeguard against future problems. In selecting locations for watershed restoration projects, Fort Belvoir emphasized watersheds associated with the sensitive lower Accotink Creek-Accotink Bay wetlands. The first project, completed in 1999, addressed subwatershed 03 (Figure 7.2), which drains to refuge area W-3. The next two projects, initiated in 2000, addressed subwatersheds 01 and 02, which also drain to refuge area W-3 (Figure 7.2).

## **8.4 CONTINUING AND FUTURE WETLAND MANAGEMENT**

Fort Belvoir intends to continue management for no net loss of wetlands and for conservation and enhancement of native biodiversity. Fort Belvoir will continue to use conservation land-use designations to protect wetland areas from direct impact by construction or other land disturbing activities, as well as from impact by land development and land use activities in adjacent areas. Fort Belvoir will continue to implement management actions, such as invasive/exotic species management, stormwater management, and problem wildlife management, to protect wetland resources from those threats. Fort Belvoir will consider the potential for impacts to wetlands when making land-use and operational decisions, and will continue to mitigate all unavoidable wetland losses/impacts consistent with U.S. Army Corps of Engineers and U.S. Environmental Protection Agency policy on wetland mitigation. Where practicable, and consistent with installation mission, Fort Belvoir will undertake actions to restore and enhance native wetland conditions. Fort Belvoir will continue to promote public access to and appropriate use of wetland resources, and will continue to provide the public opportunities for recreation and for environmental education and scientific research and study of wetland resources, consistent with resource conservation objectives.

#### **8.4.1 Wetland Management Objectives**

1. Protect against a net loss of wetlands, due to installation activities, as required by Executive Order 11990, *Protection of Wetlands*.
2. Protect against impact (e.g., loss, disturbance, degradation) to wetland resources having high conservation priority, as assigned by the Virginia Natural Heritage Program.
3. Conserve, enhance, and restore native wetland conditions, consistent with the Chesapeake Bay Program Directive 97-2, *Wetlands Protection and Restoration Goals* and the Chesapeake Bay Program's *Federal Agencies' Chesapeake Ecosystem Unified Plan*, signed by DoD and the Army in 1998.
4. Provide opportunities for public access for recreation and for environmental education and scientific research and study, consistent with resource conservation.

#### **8.4.2 Wetland Management Strategies**

1. Continue to obtain scientific information on installation wetlands to support our knowledge of their biodiversity, to identify stresses and detect changes in biodiversity, and to evaluate the effectiveness of management actions.
  - Complete the next installation-wide wetland inventory update on a 5-year cycle (in fiscal year (FY) 03). The inventory will entail field survey, photo-interpretation, wetland characterization and GIS datalayer development. The inventory update will map wetland boundaries, and will inventory the locations and acreages of each wetland type, consistent with the protocols used during the 1997 and 1999 baseline inventories for Main Post and EPG, respectively. This update will allow for a comparison among inventories to identify changes. The inventory update will include all wetland mitigation sites. Maintain the inventory in the installation GIS.
  - Perform year-round surveillance (i.e., close observation, in lieu of studies or monitoring projects) of wetlands to detect changes, and potential activities impacting wetland conditions. At a minimum, surveillance will address the vegetation component. Apart from obvious physical conditions (e.g., sediment build-up, beaver activity, etc.), stress and changes in biodiversity will be inferred from changes in vegetation conditions. If resources become available, more-sophisticated measures of ecological change (e.g., measures to detect changes in hydrology or nutrient cycling, etc.) may be employed.
  - Develop and implement a program to monitor conditions within the high-rarity ranked wetland communities, as recommended by DCR-NHP (Hobson, 1996; 1997; McCoy and Fleming, 2000). Coordinate with DCR-NHP to develop and implement the monitoring program.
  - Perform localized and/or issue-specific wetland studies/monitoring as needed to support resource management or specific installation projects, such as new development, or changes to land-use practices.

- Perform an historic wetlands identification and trend analysis. Obtain historic aerial photography at a minimum of one flight per decade from 1930 to date, and interpret the wetland boundaries for each decade. Perform a comparative analysis of the change in wetland location and type. Maintain the historic wetland interpretation, as well as all recent wetland inventories as individual files in the installation GIS for use in trend analysis.
  - Coordinate with DCR-NHP and other appropriate entities regarding stewardship recommendations for wetland resources.
2. Continue to set aside areas of ecologically significant wetlands, consistent with DoD policy for setting aside areas for conservation as “Special Natural Areas” (Section 13). As of 2000, Fort Belvoir has much of the installation’s wetland areas included within two Special Natural Areas: the ABWR and the JMAWR. Consider modifying the boundaries of these refuges and/or establishing a buffer for the refuges to protect ecologically significant wetland resources that presently are located outside the refuge boundaries. Continue to designate these set-aside areas as “environmentally constrained to development” in the installation Master Plan.
  3. Continue to implement actions to control threats to native wetland resources:
    - Continue to emphasize wetland resources protection when performing invasive/exotic species management. For example, continue to monitor and control phragmites *Phragmites australis*, as recommended by DCR-NHP (Hobson, 1996; McCoy and Fleming, 2000). In addition, develop and implement a monitoring program for other invasive/exotic species, such as marsh dewflower (*Murdannia keisak*) and hydrilla (*Hydrilla verticillata*), as recommended by McCoy and Fleming (2000). Finally, continue to perform surveillance for outbreaks of other invasive/exotic vegetation that could impact wetland plant communities.
    - Continue to emphasize wetland resources when performing watershed restoration projects. For example, complete the watershed restoration projects associated with lower Accotink Creek and Accotink Bay, as recommended by Landgraf (1999).
    - Continue to control the risk of wildlife impacts to wetland resources. Monitor beaver activity throughout the lower Pohick Creek-Pohick Bay-lower Accotink Creek-Accotink Bay wetland complex, and develop and implement protection measures if impact thresholds have been exceeded, as recommended by DCR-NHP (Hobson, 1996; McCoy and Fleming, 2000).
  4. Identify opportunities for wetland creation/enhancement/restoration projects to establish wetland conditions within previously disturbed or degraded areas (e.g., parts of T-9). Develop and maintain an inventory of potential wetland creation/enhancement/restoration project sites. Implement projects, as appropriate and possible.
  5. Continue to use the installation project/activity review process to incorporate wetland protection requirements into all phases of facilities siting, construction, renovation, operation, maintenance and demolition activities; in reviewing and supporting military

training and testing activities; and, in reviewing and responding to outdoor recreation, environmental education, scientific research and study, and all other types of land area access and use requests.

- Review and revise, as needed, the Fort Belvoir *Environmental Protection Specifications* to ensure that they include wetland protection provisions.
  - Review and revise, as needed the *Fort Belvoir Environmental Checklist* to address wetland protection.
  - Incorporate wetland protection strategies into utilities privatization, and all other privatization and outsourcing actions, as appropriate.
  - Develop recommendations for a facilities siting/design review committee to include representatives from ENRD, Master Planning and the Contract Management Division. The committee should develop and participate in a design review process to ensure consideration of wetland protection in all facilities siting and design decisions.
  - Continue to include wetland protection as part of the Excavation Permit and Demolition Permit review processes.
  - Continue to include wetland protection in all real estate actions (e.g., outgrants, leases, rights-of-entry), as appropriate.
  - Review and revise as needed the Fort Belvoir Training Regulation to address wetland protection.
  - Develop and issue a Fort Belvoir Wetland Protection Policy Letter. The policy letter will specify the installation's commitment to no net loss of wetlands, protection of wetland biodiversity, and preservation of high-quality and rare wetland resources. The letter will specify the installation's commitment to mitigation of wetland impacts.
6. Continue to perform agency coordination, notification and permitting on installation actions within or potentially affecting wetlands.
- Continue to coordinate with U.S. Army Corps of Engineers and Virginia Department of Environmental Quality for Clean Water Act Section 404 Permit actions, and for Rivers and Harbors Act Section 10 Permit actions.
  - Continue to coordinate with Virginia Marine Resources Commission and the Virginia Department of Environmental Quality for Virginia Subaqueous Bed Permit actions, and with the Water Control Board for Water Protection Permit actions.
  - Continue to coordinate with Fairfax County Wetlands Board for Fairfax County Wetlands Permit actions.

- Continue to coordinate with USFWS, National Marine Fisheries Service, Virginia Department of Game and Inland Fisheries, and other agencies as appropriate, on all wetland permit actions.
  - Develop and implement mitigation projects required by wetland permits. Monitor all wetland mitigation sites for 5 years to determine success consistent with U.S. Army Corps of Engineers policy. Perform corrective actions, as needed. Perform all reporting to agencies, as required by permit.
  - Develop a request and coordinate with the U.S. Army Corps of Engineers to develop and implement a Fort Belvoir General Permit under the Clean Water Act, Section 404.
7. Continue to provide technical assistance in emergency situations, such as fuel spills, that threaten wetland resources, as needed.
  8. Continue to respond to requests for technical information from on-post and off-post entities, as needed.
  9. Continue to investigate and enforce violations of federal and state laws and regulations, as well as DoD, DA, and Fort Belvoir policies.